CS – 21 NETWORK TECHNOLOGY AND ADMINISTRATION

Objectives:
- Build an understanding of the fundamental concepts of computer networking.
- Familiarize with the basic taxonomy and terminology of the computer networking area and advanced networking.
- Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.

Prerequisites:
- Basic knowledge of computer networking.

No	Topics	Details	Marks weight In %	Min Lec.

1	**Basics of Network, Network Models and LAN Sharing**	• Network concepts
		- What is network?
		- Use of network
		• Network model
		  - peer – to – peer,
		  - client – server
		• Network Services
		  - File service,
		  - Print service,
		  - Comm. service,
		  - Data base service,
		  - Security service,
		  - Application service
		• Network Access Methods
		  - CSMA / CD, CSMA / CA,
		  - Token passing
		  - Polling
		• Network Topologies
		- Bus, Ring, Star, Mesh, Tree, Hybrid
		• Advanced☐☐Network Topologies Ethernet, CDDI, FDDI
		• Communication Methods
		- Unicasting
		- Multicasting
		- Broadcasting
		• OSI reference model with 7 layers
		• TCP/IP network model with 4 layers
		• File And Print Sharing in LAN.
		• Mapping of network drive
		• Disk quota
		• Encryption
		• Compression
		• Net meeting
			20	12

| 2 | **Transmission Media Multiplexing & Switching Concepts Network devices** | • Transmission Media
   - Types of Transmission media
   - Guided media
   - Co – Axial Cable,
   - Twisted Pair Cable,
   - Crimping of Twisted pair cable
   - Fiber Optic Cable
• Unguided media
   - Infrared, Laser, Radio, Microwave, Bluetooth tech.
• Different Frequency Ranges
• Multiplexing & De-multiplexing
• Multiplexing Types
   - FDM,
   - TDM,
   - CDM,
   - WDM
• Switching Tech.
   - Circuit Switching,
   - Message Switching,
   - Packet Switching
• CABLE NETWORK DEVICES
• LAYER1 DEVICES
   - LAN CARD,
   - MODEM ,
   - DSL & ADSL
   - HUB(Active, Passive, Smart hub)
   - REPEATER
• LAYER2 DEVICES
   - SWITCH(Manageable, non-manageable)
   - BRIDGE(Source route, Transactional)
• LAYER3 DEVICES
   - ROUTER
   - LAYER3 SWITCH
   - BROUTER
   - GATEWAY
   - Network Printer
• WIRELESS NETWORK DEVICES
   Wireless switch
   Wireless router, ACCESSPOINT | 20 | 15 |
| 3 | **Network Protocols, Network Routing** | • Packets &Protocols
• ☐Conn. Oriented protocols -TCP& connection less protocols-UDP | 20 | 10 |

		- TCP/IP STACK
		- HTTP,
		- FTP,
		- SMTP,
		- POP3
		- SNMP,
		- TELNET,
		- ARP
		- RARP - IPX/SPX - AppleTalk, - NetBIOS Name PROTOCOL - L2CAP, RFCOMM Protocol - What is routing - Requirements of routing - Types of Routing
		- static, - dynamic, - default - Routing protocols
		- Exterior Routing protocol
		  1)BGP
		- Interior Routing protocol
		  (1)Distance vector routing
		    - RIP
		    - IGRP
		    - EIGRP
		  (2)Link state routing
		    - OSPF
		    - IS IS		

4	**IP ADDRESSING, Windows 2008 server**	- What is ip address? - Types of ip address ☐ipv4 - Class structure - subneting, supernetting - ipv6 - Basic structure of ipv6 - Implementation of ipv6 - Migration from ipv4 to ipv6 - Installation of 2008 enterprise server - Various editions of windows 2008 server - Installation & Configuration of Active Directory - Domains, Trees, Forests concept - Accounts(User, Group, Computer)	20	11

		• Policy (Security and audit) • Logging Events • MMC(Microsoft Management console)		

5	**Basics of Network Security, Internet connection & Sharing**	• Fundamental of Network Security
		• Requirements of network Security
		• Policies, Standard, Procedures, Baselines, Guide lines
		• Security methods
		  - Encryption, Cryptography
		  - Authentication
		• Security Principle –CIA Model
		• Basics of Internet
		• How internet is connecting with computer
		• Technology related internet
		  - Dial up tech.
		  - ISDN network tech.
		  - Lease line tech.
		• VPN
		  - Types of VPN
		  - Use of VPN
		  - VPN protocols (PPTP, L2TP, IPsec.)
		• Proxy server, Firewall
		• GPS, GPRS
		• CCTV tech.
			20	12

		Total	100	60

Students seminar   - 5 Lectures

Expert Talk   - 5 Lectures

Students Test   - 5 Lectures

TOTAL LECTURES 60+15=75